DIGITAL PRINTING 10.0200.20

TECHNICAL STANDARDS

An Industry Technical Standards Validation Committee developed and validated these standards on June 20, 2018. They align with the 2014 Graphic Arts Education and Research Foundation (GAERF®), Graphic Communications Skills Competencies (GCSC). Students who complete this program are eligible to earn industry-validated credentials for Adobe Certified Associate (ACA) and/or PrintED/SkillsUSA Student Association. The Arizona Career and Technical Education Quality Commission, the validating authority for the Arizona Skills Standards Assessment System, endorsed these standards on July 15, 2018.

Note 1: Standards 1-3 were added to the original standards in 2019. These standards are common to all the Communication Media Technologies programs. They were endorsed by the Arizona Career and Technical Education Quality Commission on May 3, 2019.

Note 2: Arizona's Professional Skills are taught as an integral part of the Digital Printing program.

The Technical Skills Assessment for Digital Printing is available SY2020-2021.

Note: In this document i.e. explains or clarifies the content and e.g. provides examples of the content that must be taught.

STANDARD 1.0 ANALYZE THE COMMUNICATION MEDIA TECHNOLOGIES INDUSTRY, ITS BUSINESS PRACTICES, AND ITS ROLE IN THE ECONOMY

1.1 Investigate the history and evolution of the Communication Media Technologies industry (i.e., technology, processes, production, etc.)

1.2 Examine the impact of social media and emerging technologies on the Communication Media Technologies industry

1.3 Research the societal and economic impact of the Communication Media Technologies industry

1.4 Examine the impact of the Communication Media Technologies Industry on marketing practices

1.5 Explain how diversity and inclusion are managed in the workplace to create a supportive culture

1.6 Define cultural diversity and the need for awareness and sensitivity in the workplace

1.7 Explain the acceptance of multiculturalism in the workplace (i.e., treating impartially and fairly each ethnic group, etc.)

1.8 Analyze customer service practices appropriate to the Communication Media Technologies industry

1.9 Examine time management practices appropriate to the Communication Media Technologies industry

1.10 Identify professions that comprise the Communication Media Technologies industry (i.e., animation, broadcasting, filmmaking, graphic design, illustration, music and audio productions, photography, printing, publishing, etc.)

1.11 Comply with the safety standards and regulations specific to OSHA

STANDARD 2.0 ANALYZE ETHICAL AND LEGAL ISSUES RELATED TO THE COMMUNICATION MEDIA TECHNOLOGIES INDUSTRY

2.1 Distinguish among copyright, intellectual property, and proprietary rights

2.2 Investigate copyright, intellectual property, proprietary rights, plagiarism, and software licensure

2.3 Discuss consequences in violating copyright, privacy, and data security laws (i.e., monetary penalties, prison, injunctions, financial restitution, etc.)

2.4 Explain fair use (i.e., authorships, credit lines, parody, news reporting, criticism and commentary, etc.)

2.5 Differentiate between legal and ethical standards as they apply to decision-making in the Communication Media Technologies industry

2.6 Explain libel, privacy, censorship, and first amendment rights

STANDARD 3.0 ANALYZE FACTORS THAT CONTRIBUTE TO PERSONAL SUCCESS IN THE COMMUNICATION MEDIA TECHNOLOGIES INDUSTRY

3.1 Employ written, verbal, and non-verbal communications that are appropriate to the target audience and situation

3.2 Apply formatting, editing, and proofreading skills to all forms of writing

3.3 Prepare and deliver a presentation using terminology standard to the Communication Media Technologies industry

3.4 Use interpersonal skills when communicating with colleagues, clients, and vendors (i.e., active listening, empathy, body language, openness, negotiation, problem-solving, conflict resolution, assertiveness, positive attitude, etc.)

3.5 Identify professional "dress for success" standards and practices for the Communication Media Technologies industry

3.6 Explain basic types of résumés and their use (e.g., chronological, functional, combination, targeted, and creative)

3.7 Identify the basic parts of a résumé (e.g., contact/address section, objective, profile, career summary, experience section, education section, and reference section)

3.8 Explain considerations for résumé format (i.e., simple font; plenty of white space; personalize and customize to reflect your skills and abilities, etc.)

3.9 Define a professional portfolio (e.g., organized collection of relevant writing, graphics, and projects; artifacts showcasing talents and relevant skills; and summary of professional growth)

3.10 Describe portfolio types serving different purposes (i.e., working portfolios, display portfolios, assessment portfolios, etc.)

3.11 Describe ways to build a professional portfolio [i.e., binder, digital (iPad), online portfolio, etc.]

STANDARD 4.0 ANALYZE THE TYPES OF DIGITAL PRINTING TECHNOLOGIES THAT ARE IN COMMON USE WITHIN PRINTING ESTABLISHMENTS

4.1 Describe the imaging process of production toner-based digital output devices (i.e., electrostatic charging, laser, or LED imaging, toner attraction, etc.)

4.2 Compare the print characteristics of digital, offset, and inkjet imaging technologies (i.e., suitable substrates, solids, screen tints, halftone resolution, etc.)

4.3 Identify the skill requirements of a digital press operator

STANDARD 5.0 UTILIZE INDUSTRY STANDARD SOFTWARE

5.1 Create multi-page documents using facing pages, single pages, page size and orientation, and bleeds

5.2 Describe the differences between vector and raster graphics

5.3 Create vector graphics

5.4 Create raster images

5.5 Evaluate the characteristics of using the Adobe Portable Document Format (PDF)

5.6 Determine the appropriate settings and options for a print ready PDF for digital output

5.7 Merge a variable data file with an application file for unique piece production

5.8 Define a crossover

5.9 Describe a common digital workflow (e.g., file transfer, storage, backup, archival, and naming conventions)

5.10 Explain compliance with United States Postal Service (USPS) and United Parcel Service (UPS) regulations

STANDARD 6.0 ANALYZE THE IMPACT OF COLOR

6.1 Discuss RGB (Red, Green, Blue) additive color model

6.2 Discuss CMYK (Cyan, Magenta, Yellow, Black) subtractive color model

6.3 Discuss spot color model (Pantone)

6.4 Compare color gamut capabilities of devices used in print workflow

6.5 Describe the purpose and function of International Color Consortium (ICC) profiles

6.6 Describe calibration vs. characterization of devices (e.g., monitor, camera, scanner, printer, proofer, and press)

STANDARD 7.0 DETERMINE THE PHYSICAL CHARACTERISTICS OF VARIOUS SUBSTRATES AND THE IMPORTANCE OF PROPER HANDLING DURING THE PRINT RUN

7.1 Identify the characteristics of paper (e.g., weight, finish, thickness, brightness, opacity, and grain direction)
7.2 Identify weight, coating, and size from a label found on a ream, box, or skid of paper
7.3 Identify specialty substrates (i.e., carbonless, pressure sensitive, synthetic, metallic, etc.)
7.4 Explain the importance of paper conditioning
7.5 Select the appropriate paper for different applications (i.e., magazine, business card, poster, direct mail, letterhead, etc.)
7.6 Define a parent sheet vs. a press sheet
7.7 Define folding techniques (i.e., gate-fold, z-fold, accordion, tri-fold, parallel, etc.)

STANDARD 8.0 PREPARE DOCUMENT AND ASSETS FOR OUTPUT AND PRODUCTION

8.1 Describe a job ticket
8.2 Examine the steps of preflighting a print file
8.3 Identify common quality issues that are found during the preflight process
8.4 Perform corrections to problems found during the preflight process (i.e., page size incorrect, font substitution, bleeds missing, etc.)
8.5 Describe page orientation and imposition
8.6 Create a folding dummy
8.7 Discuss the purpose, features, and functions of a Raster Image Processor (RIP)
8.8 Determine proper resolution for a specific output device (i.e., web, screen, print, etc.)
8.9 Identify printer's marks (e.g., + registration, trim, bleed, and fold)

STANDARD 9.0 DETERMINE BASIC PROOFING TYPES AND MATERIALS AND THEIR IMPORTANCE

9.1 Define electronic proof (e.g., PDF, on-screen soft proof, and electronic rendering)
9.2 Define low-resolution hard copy paginated proof
9.3 Define high-resolution contract color proof
9.4 Define a hard copy proof on actual substrate
9.5 Define sampling of Variable Data Proofing
9.6 Evaluate the proof internally to the job ticket and specifications
9.7 Explain the proof to the customer for approval

STANDARD 10.0 DEMONSTRATE SAFE USE OF EQUIPMENT AND CONSUMABLES

10.1 Locate and interpret Safety Data Sheets (SDSs) and safety measures
10.2 Apply OSHA rules and regulations and their applications (i.e., protective equipment, material handling, etc.)
10.3 Define and apply lab safety and emergency procedures (i.e., fire, chemical, etc.)
10.4 Evaluate device-specific safety
10.5 Perform necessary maintenance for all equipment
10.6 Recycle waste
10.7 Properly dispose hazardous materials

STANDARD 11.0 DETERMINE PRINT PRODUCTION WORKFLOW

11.1 Identify and prepare substrate for specific processes (i.e., paper, fabric, materials, etc.)
11.2 "Set up" the output device for production (i.e., ink, toners, tray size, etc.)
11.3 Explain the necessity of make ready and overs
11.4 Compare the press sheet to the customer-approved proof to ensure accuracy (i.e., color, quality, pagination, back up, size, paper stock, etc.)
11.5 Troubleshoot and adjust production variances (i.e., imposition, registration, color, size, etc.)

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STANDARD 12.0 ANALYZE THE COMMON TYPES OF FINISHING AND FULFILLMENT

12.1 Identify differences within inline finishing (i.e., collating, stitching, folding, drilling, etc.)

12.2 Identify differences within offline finishing (i.e., binding, padding, drilling, folding, etc.)

12.3 Identify specialty finishing techniques (i.e., foil stamping, embossing, die-cutting, scoring, coating, laminating, hand-finishing, etc.)

12.4 Identify critical steps for finishing preparation (i.e., jog paper, verify print count, job specifications, etc.)

12.5 Package product securely for delivery (i.e., shrink wrap, slip sheet, custom box, packaging slip, mail trays, etc.)

12.6 Accurately label package(s) for final destination including information specific to contents of package (i.e., company, product, product ID#, quantity, barcode, date, etc.)

STANDARD 13.0 UTILIZE MEASUREMENT UNITS AND TOOLS

13.1 Explain print specific units of measurement (i.e., pica, point, pixel, inches, etc.)

13.2 Read a ruler

13.3 Convert decimals to fractions and fractions to decimals

13.4 Convert print specific units of measure from one to another

13.5 Explain print specific measurement tools (i.e., micrometer, densitometer, spectrophotometer, loupe, type gauge, etc.)

13.6 Solve basic ratio and proportion problems

13.7 Calculate imposition for best yield

STANDARD 14.0 ESTIMATE A JOB

14.1 Calculate material costs (i.e., ink, paper, packaging, finishing, etc.)

14.2 Calculate equipment costs

14.3 Calculate labor costs

14.4 Calculate equipment run times

14.5 Calculate shipping costs

14.6 Calculate overhead

14.7 Verify total cost of a job

14.8 Determine market value (e.g., final cost to client)

14.9 Determine the most cost-effective process for job

14.10 Review actual job cost to original estimate

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